WHAT IS THE MONTANA DIABETES PROJECT AND HOW CAN WE BE CONTACTED:

The Montana Diabetes Project is funded through a cooperative agreement with the Centers for Disease Control and Prevention, Division of Diabetes Translation (U32CCU815663-01). The mission of the Diabetes Project is to reduce the burden of diabetes and its complications among Montanans. Our web page can be accessed at http://ahec.msu.montana.edu/diabetes/default.html.

For further information please contact us at:

Project Coordinator:
Todd Harwell, MPH
Phone 406/444-0593
Fax 406/444-1861
e-mail tharwell@mt.gov

Project Assistant:
Ruth Whitish
Phone 406/444-6677
e-mail rwhitish@mt.gov

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MONTANA DIABETES SURVEILLANCE & CLINICAL COMMUNICATION

MONTANA DIABETES PROJECT

Montana Department of Public Health and Human Services
Chronic Disease Prevention and Health Promotion Program
Room A206, Cogswell Building
PO Box 202951
Helena, Montana 59620-2951

Montana Diabetes Surveillance & Clinical Communication

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ISSUE: OCTOBER – DECEMBER 1998

Health Care Utilization by Montana Medicare Beneficiaries with Diabetes 1993-1995

WHAT'S INSIDE

BACKGROUND:

This report is the result of a collaborative effort initiated in 1995 by the Mountain-Pacific Quality Health Foundation (MPQHF) and the Montana Department of Health and Human Services (MT DPHHS). The objectives of this effort were two-fold. The first was to describe the prevalence of diabetes among Montana Medicare beneficiaries. The second was to describe the health care utilization of beneficiaries with diagnosed diabetes. The overall goal of this report is to highlight potential opportunities to improve health care for beneficiaries with diabetes.

METHODS:

Medicare inpatient and outpatient billing data from 1993 and 1994 were used to identify Montana Medicare beneficiaries with diagnosed diabetes. For the purpose of this assessment, a Medicare beneficiary with diagnosed diabetes was defined as a Montana resident who met the following criteria: 1. Fee-for-service Medicare beneficiary, alive on December 31, 1994; 2. Eligible for Part A & Part B for at least six months between January 1, 1993 and December 31, 1994; and 3. Had at least one diabetes-related inpatient claim or at least two diabetes-related office visits between January 1, 1993 and December 31, 1994. The ICD-9-CM codes used to identify diabetes-related

claims were: Diabetes mellitus (250.0-250.9), Background diabetic retinopathy (362.01), Proliferative diabetic retinopathy (362.02), Diabetic cataract (366.41), and Polyneuropathy in diabetes (357.2). The CPT codes used to identify office visits were: New patient codes (99201-99205) and Established patient codes (99211-99215).

CHARACTERISTICS OF MONTANA MEDICARE BENEFICIARIES WITH AND WITHOUT DIABETES:

127,173 Montana Medicare beneficiaries met the first two criteria. Of these, 8,861 (7%) also met the third criteria and were defined as having diagnosed diabetes. Medicare inpatient and outpatient data from 1995 were analyzed to describe the epidemiology and health care utilization of Montana beneficiaries with diagnosed diabetes. The majority of all beneficiaries (N=127,173) were female (55%), were White (98%), and lived in zip codes in proximity to Montana's seven largest cities and towns (defined as urban here). The majority of beneficiaries were 65-74 years of age (46%) and 75-84 years of age (32%), while fewer beneficiaries were >85 (11%) or <65 years of age (11%).

PREVALENCE OF DIABETES AMONG BENEFICIARIES:

The prevalence of diabetes among beneficiaries was 7.0% (8,861/127,173). Table 1 displays the rates by gender, age, race, and location (urban/rural). The rates were similar among men and women. The prevalence of diabetes among Non-white beneficiaries was two times higher as compared to White beneficiaries. Additionally, the rate among beneficiaries living in urban zip code areas was similar to those living in rural areas.

Figure 1 displays the prevalence of diabetes per 10,000 beneficiaries by Health Service Area (HSAs). HSAs are based on aggregates of counties and independent cities from a cluster analysis of where Medicare patients obtained routine hospital care in 1988 (Makuc DM, 1991).

TABLE 1.	Beneficiaries with diabetes	Total number of Beneficiaries	% with diabetes
Gender			
Male	4031	56962	7.1
Female	4830	70211	6.9
Race			
White	83432	122516	6.8
Non-white	411	3017	13.6
Zip code area			
Urban	4510	64977	6.9
Rural	4056	61772	6.6

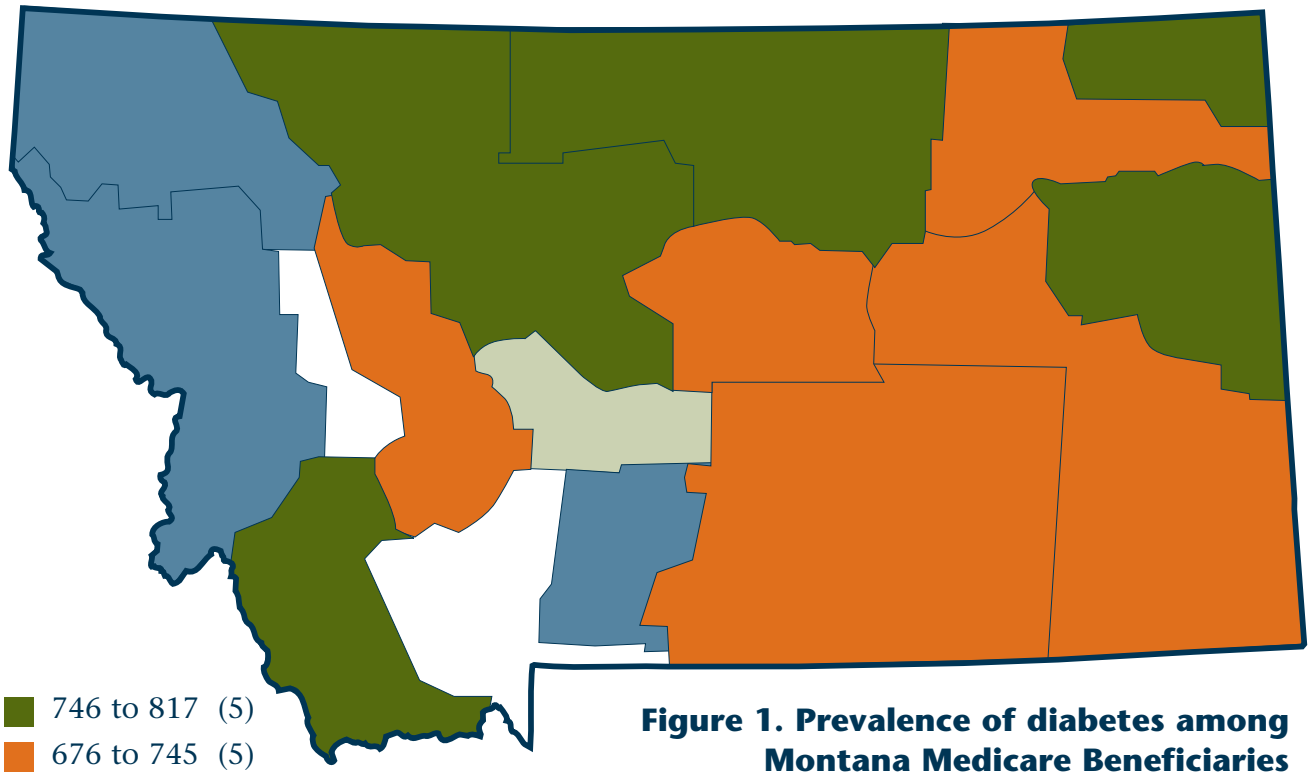


Figure 1. Prevalence of diabetes among Montana Medicare Beneficiaries by Health Service Area, 1995

HOSPITALIZATION AMONG MONTANA MEDICARE BENEFICIARIES:

Of the 8,861 beneficiaries with diagnosed diabetes in 1995, 2,960 (33%) were hospitalized at least once, and 1,241 (14%) were hospitalized two or more times. Figure 2 displays the number of hospitalizations among beneficiaries with diabetes as compared to those without diabetes. Among those who were hospitalized, 63% (n=1,865) had heart disease and 48% (n=1,421) had hypertension listed as one of the diagnosis codes. Six percent had renal failure listed as a diagnosis code and 9% had other renal conditions listed. Ten percent (n=296) had a primary diagnosis of influenza or pneumonia and 3% had a primary diagnosis of stroke. Forty-seven (1.5%) beneficiaries with diabetes were hospitalized for lower extremity amputation.

FIGURE 2.

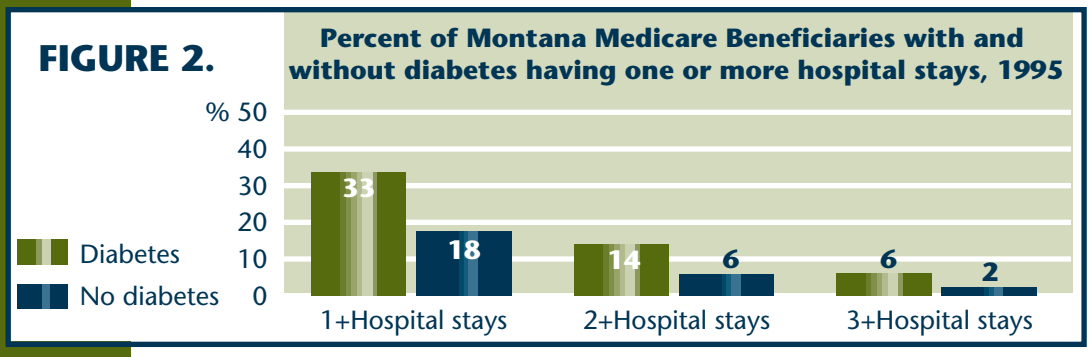


Figure 3 displays the hospitalization rates (based on all ten diagnosis codes) among Medicare beneficiaries with diagnosed diabetes as compared to those without diabetes. The rates of hospitalizations among beneficiaries with diabetes were 1.9 to 64.0 times higher across all hospitalization categories.

OUTPATIENT UTILIZATION AMONG MONTANA MEDICARE BENEFICIARIES:

Of the 8,861 Medicare beneficiaries with diabetes, 90% had at least one office visit in 1995 and 57% had one or more visits specifically for diabetes-related care. Figure 4 displays the percentage of beneficiaries with

FIGURE 3.

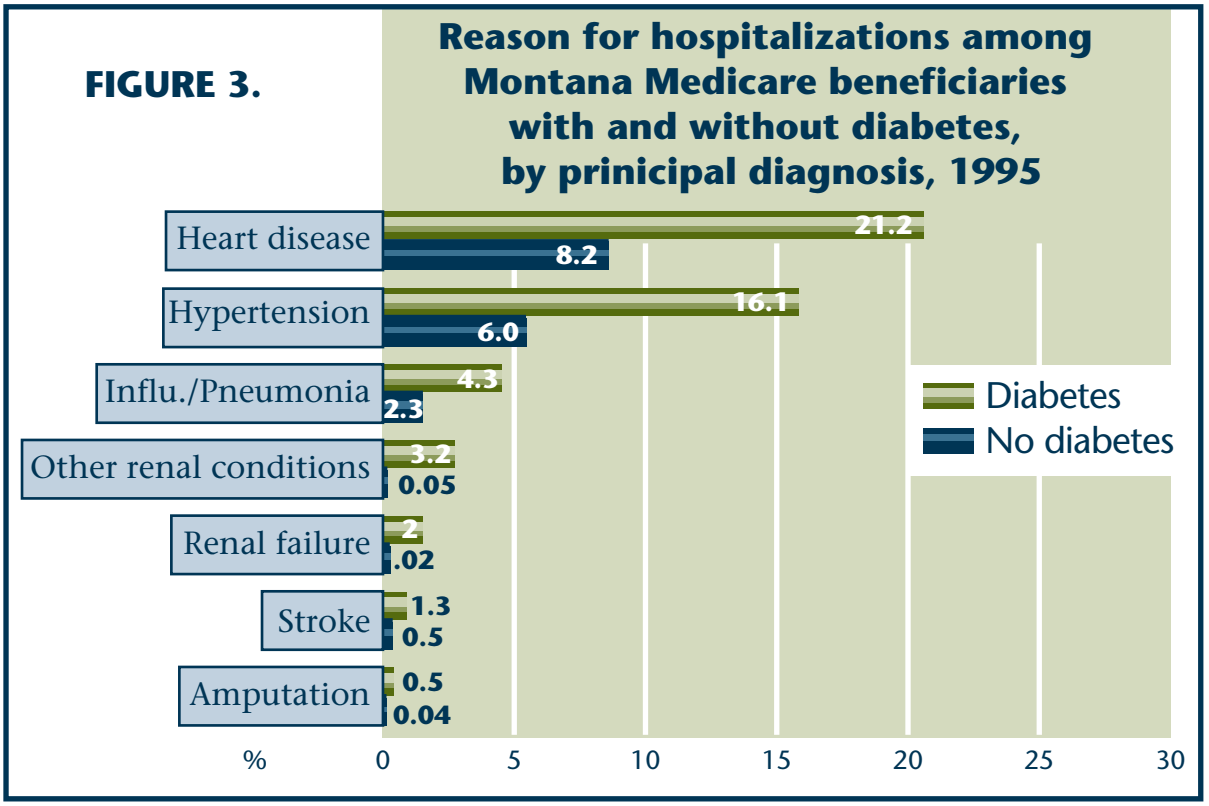


FIGURE 4.

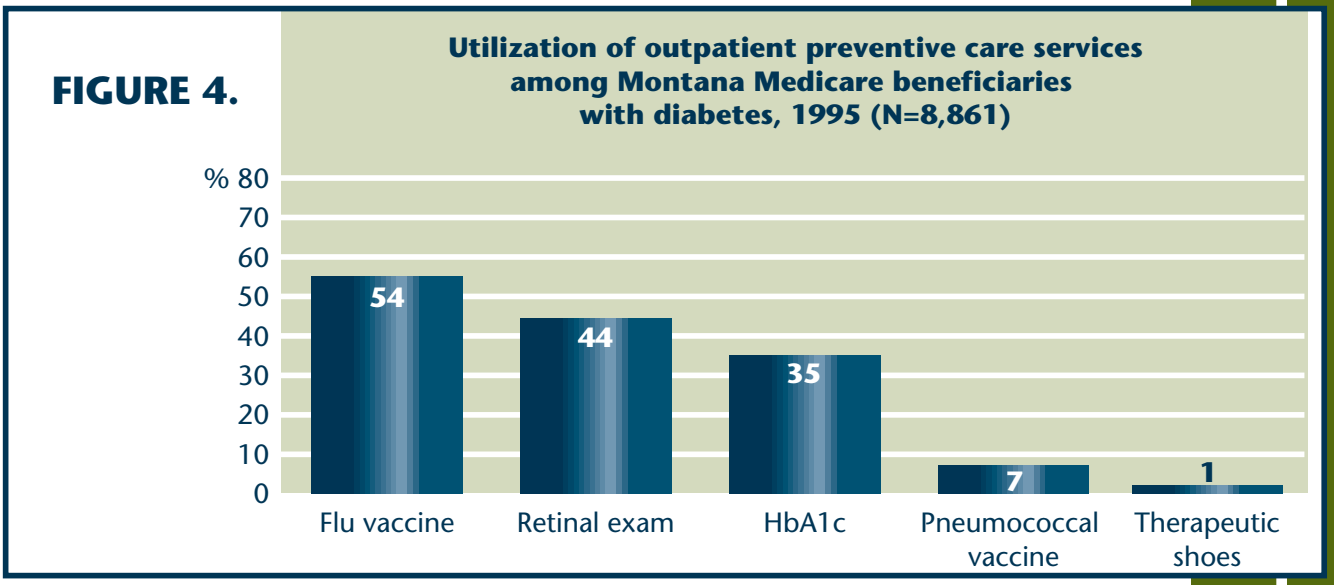
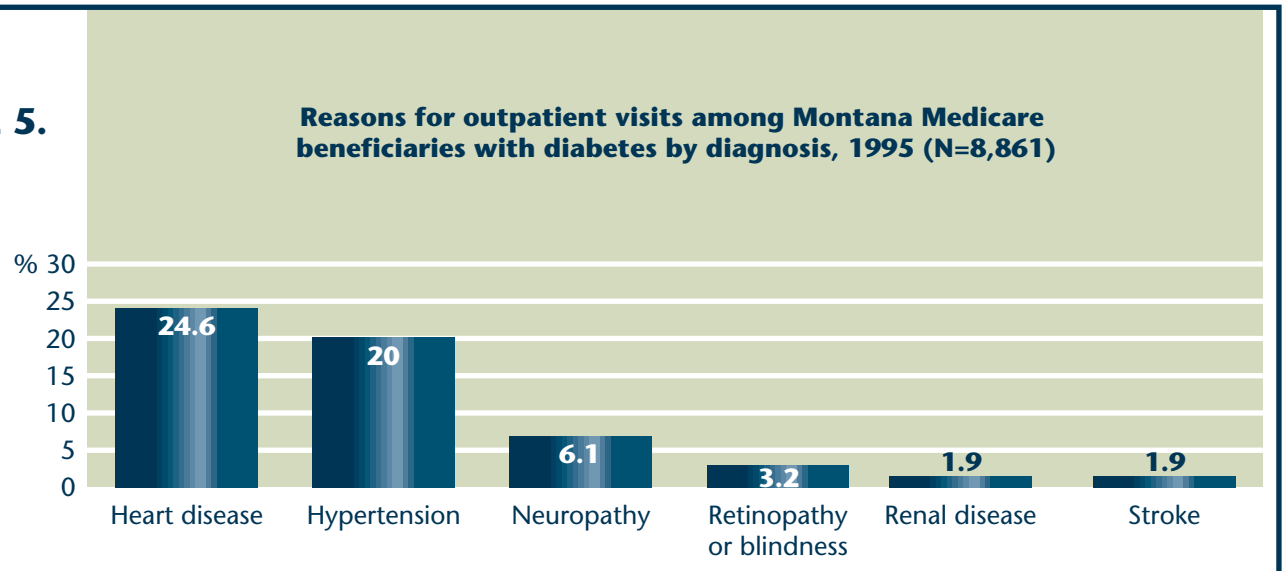


FIGURE 5.



diabetes having billed diabetes preventive care services in 1995. Figure 5 displays the frequency for the types of outpatient visits.

LIMITATIONS:

This method of case ascertainment is an imperfect one and will underestimate the true prevalence of diabetes among Medicare beneficiaries because it will miss persons with diagnosed diabetes who had no Medicare claims, or only one outpatient claim, from 1993-1994. In addition, it will miss persons with diabetes who were not yet diagnosed. The information in this report is subject to the limitations of using administrative claims data for epidemiological analyses. In general, the information with the highest reliability are those data related to billing or program administration, e.g., diagnosis and procedure codes, beneficiary and provider identification, and total charges. Some specific limitations of Medicare claims data include the following: 1) the beneficiary identifier may change over time; 2) demographic information such as race and county are based on self report at the time of enrollment in Social Security; and 3) the beneficiary ZIP Code is the ZIP Code for mail contact with the beneficiary and may not be the actual ZIP Code of residence.

Reported by: Lynn Marek, MS, Mountain-Pacific Quality Health Foundation (MPQHF); Michael J. McInerney, PhD (MPQHF); Jack McMahon, MD (MPQHF); Christi Williams (MPQHF); Steven D. Helgerson, MD, MPH (Epidemiology for Action); Todd S. Harwell, MPH (MT DPHHS); Jane Smilie (MT DPHHS); Michael R. Spence, MD, MPH (MT DPHHS). A full copy of this report is available by calling the Montana Diabetes Project.

COMMENTARY:

Nancy Eyler, MD, Missoula, Montana; Charles McClave II, MD, Yellowstone Medical Center West, Billings, Montana

PREVALENCE OF DIABETES AMONG MONTANA MEDICARE BENEFICIARIES:

There are three issues we would like to highlight in terms of the prevalence of diabetes among Montana Medicare beneficiaries. First, diabetes is common among older Montanans (7% overall prevalence rate). Second, the prevalence among

non-Caucasian older Montanans, the majority of whom are American Indians, is two times higher as compared to Caucasian Montanans (13.6% vs. 6.8%, respectively). Third, the prevalence rate of diabetes is fairly equally distributed geographically throughout the state. These data suggest that most, if not all, rural and urban primary care clinicians throughout the state are providing care to a considerable number of older Montanans with diagnosed diabetes. The overall prevalence rate and the prevalence rates among Caucasian and non-Caucasian beneficiaries are comparable to the prevalence estimates from Montana's Behavioral Risk Factor Surveillance System surveys (BRFSS). The statewide prevalence of self-reported diabetes among Caucasian Montanans >65 years of age from 1994 through 1997 was 7.4%. The prevalence estimates from the 1997 BRFSS survey of Montana American Indians and Caucasians (1994-1997) >65 years of age and living on or near the seven reservations were 27.3% and 10.8%, respectively.[1] These data highlight an important observation: older Montanans, especially those who are American Indian, are at very high risk for diabetes. It is sobering to realize that an unknown and potentially equal number of older Montanans have diabetes but remain undiagnosed.

Screening and early diagnosis are critical to reduce the burden and complications of diabetes. The American Diabetes Association (ADA) recently revised their recommendations for screening for Type 2 diabetes.[2] The threshold for a diagnosis of diabetes was lowered: instead of the previous fasting plasma glucose (FPG) >140 mg/dl, the new recommendation ties diagnosis to a FPG >126 mg/dl or symptoms of diabetes and a random plasma glucose >200 mg/dl. For persons with one or more risk factors (e.g. family history of diabetes, obesity, American Indian race/ethnicity, and hypertension) screening should be considered every three years.

HOSPITAL UTILIZATION AMONG BENEFICIARIES WITH DIAGNOSED DIABETES:

Over 2,900 beneficiaries with diagnosed diabetes (33%) were hospitalized at least once in 1995, over 1.7 times higher than the rate in beneficiaries without diabetes. Additionally, persons with diagnosed diabetes were 2.3 times more likely to be hospitalized on two or more occasions, and three times more likely to have three or more hospitalizations in 1995 as compared to beneficiaries without diabetes. The most frequent diagnoses prompting a hospital admission (based on ten diagnosis codes listed for each admission) were heart disease (21%), hypertension (16%), and influenza/pneumonia (4%). While hospitalizations for renal disease, stroke, and lower extremity amputations were less frequent, the rates for these conditions were many times higher in beneficiaries with diabetes than in those without diabetes.

OUTPATIENT PREVENTIVE CARE SERVICES:

As expected, heart disease (listed as the primary reason for an outpatient visit in 25% of visits) and hypertension (20% of visits) were the most frequent diagnoses for outpatient care. Additionally, outpatient visits for neuropathy, while less frequent (6% of visits), were common among beneficiaries with diagnosed diabetes. As mentioned in the public health commentary, a number of diabetes preventive health

services are underutilized. For example, over two thirds of Montana Medicare beneficiaries with diagnosed diabetes did not have a HbA1C test reflected in Medicare bills in 1995, and more than half (56%) did not have an annual dilated retinal exam.

A CALL TO ACTION:

The rates of hospitalization and the utilization of outpatient preventive care services for Montana Medicare beneficiaries with diagnosed diabetes are comparable to national estimates.[3] All across the United States, including Montana, these data should be a call to action for clinicians providing care to persons with diagnosed diabetes and persons with diabetes not yet diagnosed.[4-5] Particular emphasis should be placed on increasing the delivery of preventive care services to reduce the rates of complications and hospitalizations among persons with diabetes. We urge Montana physicians who care for patients with diabetes to incorporate the following recommendations into the daily care of patients with diabetes:

Metabolic Control: The hallmark of diabetes care focuses on glucose monitoring and treatment. The DCCT and Ohkubo, et al. studies have shown that aggressive glucose monitoring and treatment reduce the rates of complications among persons with diabetes.[6-7] Additionally, data from the recently released United Kingdom Prospective Diabetes Study (UKPDS) confirm these previous findings (see KEY Diabetes references). Monitoring glucose levels among persons with diabetes (primarily Type 2 diabetes among Medicare beneficiaries) includes assessing the patient's HbA1C levels, minimally twice a year for patients meeting treatment goals and who have stable glycemic control, and more frequent testing in patients whose treatment has changed or who are not meeting glycemic goals.[2] Self-monitoring blood glucose for patients is critical, and clinicians should educate and work with all patients with diabetes (both Type 1 and Type 2) to promote self-monitoring. The cost of glucose testing strips is no longer a barrier for Medicare beneficiaries, because effective July 1, 1998, Medicare covers this service for all beneficiaries with diabetes, regardless of insulin use. This service is also covered by Montana Medicaid as of August 1998.

Cardiovascular Disease: As evident from the data in this report, heart disease and hypertension are the most common reasons for hospitalizations and outpatient visits for Montana beneficiaries with diagnosed diabetes. In terms of prevention, clinicians should continue to promote regular physical activity, improved nutrition, and cessation of tobacco use among patients with diabetes. Blood pressure should be monitored at each clinic visit and screening for elevated cholesterol and lipids should be completed at least annually. These data also suggest the need for the aggressive treatment of hypertension and lipid disorders among persons with diabetes. Additionally, aspirin therapy has been shown to be an effective primary and secondary preventive measure for persons with diabetes at risk for cardiovascular events.

Adult Immunizations: As this report describes, beneficiaries with diagnosed diabetes have higher rates of hospitalizations from influenza and pneumococcal pneumonia as compared to those without diabetes, and a large proportion (46%) did not have an influenza vaccination billed to Medicare in the past year. Additionally, a recent study by the CDC has found that persons with

diabetes are at a higher risk of death from influenza and pneumonia (between 5% and 15%) as compared to persons not having diabetes.[8] Both an annual influenza immunization and at least a one-time pneumococcal immunization are recommended for persons with diabetes over two years of age.[9-10] These vaccines are safe (the risk of side effects are minimal) and are a simple and effective means of preventing morbidity and hospitalizations from flu and pneumonia.

Renal Disease: Renal failure and other renal conditions leading to hospitalizations are fairly common among Montana Medicare beneficiaries with diabetes. Preventing and/or delaying the progression of kidney disease among persons with diabetes can be implemented through routine screening for urine microalbuminuria. Strict control of hypertension among patients with diabetes should be achieved through the use of ACE inhibitors, with the goal of <130/85. Additionally, ACE inhibitors should be considered for use in normotensive patients with either Type 1 or Type 2 diabetes that have clinical albuminuria or microalbuminuria.

Neuropathy: Forty-seven beneficiaries with diagnosed diabetes (1.5%) were hospitalized for lower extremity amputations, and 6% had an outpatient visit for neuropathy in 1995. Preventing foot complications among persons with diabetes can be accomplished through performing a brief visual foot exam each time the patient visits the clinic and by performing a yearly comprehensive foot exam including checking pedal pulses and testing sensation. Patients at risk for foot complications, which includes those with neuropathy, a history of previous lesions or an amputation, require routine preventive care and surveillance. These persons are eligible for therapeutic shoes and/or insoles, both of which are covered by Medicare and Montana Medicaid. This preventive service for beneficiaries with diagnosed diabetes remains untapped (1% of Montana beneficiaries with diagnosed diabetes received therapeutic shoes or insoles in 1995).

Retinopathy and Dilated Retinal Exams: Over half of beneficiaries with diagnosed diabetes did not receive a dilated retinal exam in the past year. This preventive measure is critical in detecting and preventing diabetic retinopathy and is recommended to be completed annually.[2]

PATIENT EDUCATION AND AWARENESS:

While this report does not provide direct data on Montana Medicare beneficiaries' awareness and knowledge of diabetes self-care and preventive care, the utilization data indirectly suggests that there is room for improvement. Clinicians should take every opportunity to provide awareness and education to persons with diabetes, their families, and their other important caregivers at each clinic visit. Critical areas for discussion and teaching include the importance of glycemic control (i.e., what HbA1C levels mean and why they are important measures; why daily self-monitoring of blood glucose levels is important), physical activity, nutrition and tobacco use cessation, self-foot care (i.e., how to properly take care of their feet and check their feet each day), the importance of annual retinal exams, and the need for yearly influenza vaccinations and a current pneumococcal immunization. Providing awareness and education to persons with diabetes is simple.

However, behavior change (i.e., smoking cessation, changing eating habits, etc.) is not so simple. Care should be taken to repeat these positive health messages routinely, and to provide a positive and motivational effort with patients wherever they are in the continuum of behavior change. Finally, a team approach in the delivery of diabetes care and patient education is important. When possible, physicians should utilize other health care providers (i.e. nutritionists, diabetes educators, pharmacists and others) who can support both the physician and the patient, and provide additional expertise in the delivery of diabetes care and patient education.

CONCLUSIONS:

Montana providers face a number of opportunities and challenges regarding the delivery and improvement of diabetes care. Collaborative efforts such as this between the MT DPHHS and the MPQHF are critical in providing a state perspective of diabetes among Montana Medicare beneficiaries. Additionally, MT DPHHS and MPQHF are implementing programs to address the needs described in the report. Examples of these programs include the statewide diabetes care quality improvement efforts (direct assistance to primary care clinics and community health centers), and the Quality Diabetes Education Initiative (training for health care professionals interested in providing diabetes patient education). We anticipate and look forward to future reports such as this to show improvement and continuing improvement in the delivery of diabetes care and patient education in Montana.

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NEW BENEFITS FOR MEDICARE BENEFICIARIES & MEDICAID RECIPIENTS WITH TYPE 2 DIABETES:

Medicare has recently revised their reimbursement policy for self-monitoring blood glucose testing supplies for all beneficiaries with diabetes. The new policy provides reimbursement for blood glucose test strips, meters and lancets for all Medicare Part B or Medicare managed care enrollees with diabetes. A cap of 100 strips and lancets prescribed in three-month allotments for beneficiaries with diabetes NOT requiring insulin medication has been instituted by HCFA. The physician treating the patient with diabetes must order these supplies. Providers must specify by prescription, the number of times a patient should test each day. Prescriptions written as "test as needed" will not be honored. Additional strips can be ordered with the following requirements: a. physician documentation in the medical record of the need for additional strips; b. the physician must see and evaluate the patient within six months prior to ordering higher than usual quantities; c. the patient must forward a log of test results to the supplier documenting higher testing frequency. Physicians are expected to renew the orders for testing supplies every six months. Montana Medicaid is also providing similar coverage for glucose testing supplies.

KEY DIABETES REFERENCES:

• Benefits of influenza vaccination for low-, intermediate-, and high-risk senior citizens. Nichol KL, Wuorenma J, von Sternberg T, Arch Intern Med 1998 Sep 14;158(16)1769-76. This study found that healthy senior citizens and those with underlying medical conditions such as diabetes are at risk for serious complications of influenza and benefit from vaccination. The authors reported significant reductions in the rate of pneumonia and respiratory hospitalizations as well as all-cause mortality.

• Reducing lower-extremity amputations due to diabetes. Application of the staged diabetes management approach in a primary care setting. Rith-Najarian, S, Branchaud C, Beaulieu O, Gohdes D, Simonson G, Mazze R. J Fam Pract 1998 Aug;47(2):127-32. This prospective study of American Indians with diabetes in a rural primary care clinic found that a customized and systematic implementation of practice guidelines by providers was associated with improved diabetic foot care outcomes (i.e., reduction in lower extremity amputations).

• Mortality from coronary heart disease in subjects with type 2 diabetes and in nondiabetic subjects with and without prior myocardial infarction. Haffner SM, Lehto S, Ronnemaa T, Pylorala K, Laakso M. N Engl J Med 1998 Jul 23;339(4):229-34. This Finnish population-based study found that persons with diabetes without a previous myocardial infarct (MI) have as high a risk of MI as non-diabetic patients with a previous MI. The authors suggest that cardiovascular risk factors among persons with diabetes be treated as aggressively as in non-diabetic patients with a previous MI.

• Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). UK Prospective Diabetes Study (UKPDS) Group. Lancet 1998 Sep 12;352(9131):837-53. This large UK prospective study of newly diagnosed persons with type 2 diabetes found that intensive blood glucose control (sulfonylureas or insulin) substantially decreased the risk of microvascular complications but not macrovascular complications in patients with type 2 diabetes.

• Efficacy of atenolol and captopril in reducing risk of macrovascular complications in type 2 diabetes: UKPDS 39. BMJ 1998 Sep 12;317(7160):713-20. This randomized controlled trial compared use of captopril or atenolol against less tight control of blood pressure among persons with type 2 diabetes and hypertension. Blood pressure lowering with captopril or atenolol was similarly effective in reducing the incidence of diabetic complications.

• Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. BMJ 1998 Sep 12;317(7160):703-13. This randomized control trial in persons with type 2 diabetes and hypertension compared the effect of tight control of blood pressure (<150/85 mm Hg) using atenolol or captopril against a less tight controlled (<180/105 mm Hg) arm. Patients in the tight blood pressure control group achieved clinically important reductions in the risk of death from diabetes, complications related to diabetes, progression to diabetic retinopathy, and deterioration in visual acuity.